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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MUETING, RAASCH & GEBHARDT, P.A. P.O. BOX 581415 MINNEAPOLIS, MN 55458				
EXAMINER EGWIM, KELECHI CHIDI				
ART UNIT			PAPER NUMBER	
1713				

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/817,651

Applicant(s)

O'BRIEN ET AL.

Examiner

Dr. Kelechi C. Egwim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 9,28-35,38 and 39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8,10-27,36,37 and 40 is/are rejected.
- 7) ☒ Claim(s) 40 is/are objected to.
- 8) ☒ Claim(s) 1-40 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 072904 & 020705.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-27, 36, 37 and 40, drawn to a method for preparing a dispersed water-dispersible polymer from an oxirane polymer and an acid polymer, classified in class 525, subclass 194.
 - II. Claims 28-34 drawn to a coating composition comprising a quaternary ammonium salt, a process of using and coated article prepared therefrom, classified in class 525, subclass 408.
 - III. Claim 35, drawn to an article comprising a cured film, classified in class 428, subclass 411.1.
 - IV. Claims 38 and 39, drawn to a method of preparing a dispersed water-dispersible polymer from sets of monomers, wherein one set is polymerized in the presence of the other, classified in class 524, subclass 458.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I-IV are unrelated. The inventions are not disclosed as capable of use together and they have different designs, modes of operation, and/or effects (MPEP § 802.01 and § 806.06).

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3. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

5. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. This application contains claims directed to the following patentably distinct species:

- a. wherein the oxirane polymer is prepared by polymerizing oxirane functional monomers.(claims 5-8, 12-16 and 40)
- b. wherein the oxirane polymer is prepared by functionalizing a polymer with an oxirane functionalizing compound.(claim 9)

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

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Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

7. During a telephone conversation with Ann Mueting on 6/12/06, a provisional election was made with traverse to prosecute the invention of Group I, species a, claims 1-8, 10-27, 36, 37 and 40. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9, 28-35, 38 and 39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

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remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

9. Claim 40 is objected to because of the following informalities: In the third-to-the-last line of claim 40, the word "ratio" is misspelled "ration".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-6, 10, 11, 14, 17, 18, 20-27, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Chu et al. (USPN 4,446,258).

In col. 2, line 54 to col. 3, line 62, col. 25-68, col. 6, lines 20-24 and Example 1, Chu et al. teach a method, comprising providing an oxirane-functional polymer having an oxirane functionality of 0.2 to 2 and a number average molecular weight of up to about 6000; providing an acid-functional polymer having a number average molecular weight of 3,000 to 20,000, wherein the acid-functional polymer is a vinyl polymer formed as the reaction product of at least 20% acid-functional monomer and the balance other monomers exemplified by (meth)acrylate ester and styrene; reacting the oxirane-

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functional vinyl addition polymer and the acid-functional polymer together in the presence of a tertiary amine to form a water-dispersible polymer; and dispersing the water-dispersible polymer in a carrier comprising water; wherein the weight ratio of the oxirane-functional vinyl addition polymer to acid-functional polymer is at least 40:60, with equivalent amounts of amine:oxirane groups.

Although the acid number is not explicitly recited, the acid number is inherent in the claimed percentage of the acid-functional monomer in the acid polymer.

Thus, the requirements for rejection under 35 U.S.C. 102(b) are met.

12. Claims 1-8, 10, 12-15, 17, 19-21, 23-27, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Hart et al. (USPN 5,344,858).

In col. 2, line 7-24, col. 3, line 14 to col. 4, line 10 and col. 6, lines 46-55, Hart et al. teach a method, comprising providing an oxirane-functional polymer having an oxirane functionality of up to 4500 (from reaction of 0.1 to 1 mole of phosphoric acid per equivalent of the epoxy group of the polyepoxide pre-resin), wherein the oxirane-functional polymer may be prepared from a combination of glycidyl (meth)acrylate, a (meth)acrylate ester and styrene; an acid-functional polymer formed as the reaction product of up to 25% acid-functional monomer and the balance other monomers exemplified by styrene and ethyl acrylate, wherein the acid-functional polymer has a acid number from about 20 to about 350; reacting the oxirane-functional vinyl addition polymer and the acid-functional polymer together in the presence of a tertiary amine, which may be initially used to neutralize the acid-functional polymer, to form a water-

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dispersible polymer; and dispersing the water-dispersible polymer in a carrier comprising water; wherein the weight ratio of the oxirane-functional vinyl addition polymer to acid-functional polymer is 90:5 to 50:50.

13. Claims 1-8, 10, 12-17, 19-21 and 23-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilfinger et al. (USPN 5,811,484).

In col. 2, Wilfinger et al. teach a method, comprising providing an oxirane-functional polymer formed as the reaction product of up to 3% or glycidyl (meth)acrylate, up to about 40% of styrene, 20 to 59.9% of hydroxy functional (meth)acrylate monomers, and the balance of other (meth)acrylate esters; an acid-functional polymer formed as the reaction product of 10 to 33% of acid-functional monomer, up to 45% of styrene and the balance of (meth)acrylate esters, wherein the acid-functional polymer has a acid number from about 70 to about 240; reacting the oxirane-functional vinyl addition polymer and the acid-functional polymer together in the presence of a neutralizing amount of an amine exemplified by dimethlethanolamine and triethylamine, to form a water-dispersible polymer; and dispersing the water-dispersible polymer in a carrier comprising water; wherein the weight ratio of the oxirane-functional vinyl addition polymer to acid-functional polymer is 85:15 to 60:40.

Although the oxirane functionality is not explicitly recited, the oxirane functionality is inherent in the claimed percentage of the oxirane monomer in the oxirane polymer.

Thus, the requirements for rejection under 35 U.S.C. 102(b) are met.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chu et al.

While Chu et al. does not recite the specific ratio of the other monomers relative to the acid monomers in the acid-functional acrylic polymer, one of ordinary skill in the art would have found it *prima facie* obvious to determine a workable or even optimum range for the monomer range in the acrylic copolymer. “[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); “[W]here the general conditions of a claim are disclosed in the art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

16. Claims 11, 16, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hart et al.

While Hart et al. does not recite molecular weights and the specific ratio of the monomers in the oxirane-functional polymer, one of ordinary skill in the art would have found it *prima facie* obvious to determine a workable or even optimum range for the

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molecular weights and monomer range in the oxirane-functional copolymer.

"[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); "[W]here the general conditions of a claim are disclosed in the art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

17. Claims 11, 18, 22 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable Wilfinger et al.

While Wilfinger et al. does not recite the amine:oxirane ratio and molecular weights for the copolymers, one of ordinary skill in the art would have found it *prima facie* obvious to determine a workable or even optimum range for the amine:oxirane ratio and molecular weights for the copolymers. "[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); "[W]here the general conditions of a claim are disclosed in the art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kelechi C. Egwim whose telephone number is (571) 272-1099. The examiner can normally be reached on M-T (7:30-6:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KELECHI C. EGWIM PH.D.
KCE PRIMARY EXAMINER

